

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were observed on the 20th, 21st, and 24th.

### ○ DROUGHT.

At Minden, Nebr., the month was very dry; no fall plowing was done; and pastures were injured. At Howe, Nebr., no rain fell after the 15th, and wells were failing. Drought prevailed at Concordia, Kans.; many wells were dry and water was scarce. At Hannibal, Mo., no rain fell after the 15th; water for stock was scarce and wheat suffered by drought. At Pickering, Mo., the month was dry; streams were very low; water for stock scarce, and the ground too dry to plow. At Woonsocket, S. Dak., the drought continued during the month, and very little plowing was done. A report from Marshall, Minn., dated the 1st, stated that Island Lake, Goose Lake, and Lake Stay were dry.

### ○ PRAIRIE AND FOREST FIRES.

On the 2d extensive prairie fires were reported near New

England City, N. Dak., and north and east of Bismarck, N. Dak. Prairie fires were reported south and west of Bismarck on the 4th. On the 9th prairie fires occurred at Cannon Ball, N. Dak. Destructive prairie fires were reported along the Cannon Ball, Knife, and Heart Rivers, N. Dak., during the first half of the month. Reports of the 21st from Los Angeles, Cal., state that extensive mountain fires prevailed near the Santa Monica Cañon, and grass fires on the plains, causing considerable damage. A report from San Diego, Cal., dated the 22d, states that brush fires prevailed, with hot, dry winds from the n. and nw., badly drying and burning raisin grapes. On the 2d timber fires had caused great damage near Rapid City, S. Dak.; several ranches were burned, and many telegraph poles were destroyed. On the 3d snow and rain nearly extinguished the fires. Destructive fires were also reported in the region of Rapid City on the 5th and 31st. Forest fires were reported near Red Bluff, Cal., on the 9th, 10th, 11th, 15th, and 25th to 31st.

## ○ VERIFICATIONS.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

### ○ FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for October, 1890, were made by 2d Lieut. W. A. Glassford, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant John P. Finley, Signal Corps.

*Percentages of forecasts verified, October, 1890.*

States.		States.	
Maine.....	80.3	Kentucky.....	85.7
New Hampshire.....	73.2	Ohio.....	84.8
Vermont.....	75.0	West Virginia.....	86.4
Massachusetts.....	76.3	Indiana.....	82.6
Rhode Island.....	86.8	Illinois.....	81.0
Connecticut.....	82.1	Lower Michigan.....	78.9
Eastern New York.....	84.3	Upper Michigan.....	76.4
Western New York.....	84.1	Wisconsin.....	75.4
Eastern Pennsylvania.....	86.8	Minnesota.....	77.7
Western Pennsylvania.....	79.3	Iowa.....	75.2
New Jersey.....	87.1	Kansas.....	83.1
Delaware.....	84.3	Nebraska.....	86.3
Maryland.....	86.6	Missouri.....	77.7
District of Columbia.....	88.3	Colorado.....	83.0
Virginia.....	84.0	North Dakota.....	78.7
North Carolina.....	84.3	South Dakota.....	83.2
South Carolina.....	92.7	Southern California*.....	91.8
Georgia.....	92.8	Northern California*.....	89.8
Eastern Florida.....	90.6	Oregon*.....	83.2
Western Florida.....	92.1	Washington*.....	80.9
Alabama.....	91.4	By elements: Weather.....	88.5
Mississippi.....	91.0	Temperature.....	77.1
Louisiana.....	90.8	Monthly percentage of weather and temperature combined.....	83.9
Texas.....	85.9		
Arkansas.....	85.9		
Tennessee.....	87.0		

\*In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. †The forecasts of temperature in districts east of the Rocky Mountains for October, 1890, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. ‡The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

### ○ FORECASTS FOR 48 HOURS IN ADVANCE.

Appreciating the great importance that long time predic-

tions possess for the general public the Chief Signal Officer has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 11; temperature, 3. Percentages of verifications: weather, 60.0; temperature, 83.3; weather and temperature combined, 63.6. No forecasts for 72 hours were made during the month.

### ○ CAUTIONARY SIGNALS FOR OCTOBER, 1890.

Statement showing percentages of justifications of wind signals for the month of October, 1890:

*Wind signals.*—(Ordered by 2d Lieut. W. A. Glassford). Total number of signals ordered, 121; justified as to velocity, wholly, 79, partly, 9; justified as to direction, 112. Of the signals ordered 88 were cautionary, of which 54 were wholly, and 6 partly justified; and 33 were storm signals, of which 25 were wholly, and 3 partly justified. 48 signals were ordered for easterly winds, of which 42 were justified, and 73 were ordered for westerly winds, of which 70 were justified. Percentage of justifications, 71.7.

No cold-wave signals were ordered during the month.

*Percentages of verifications of weather and temperature signals reported by directors of the various State Weather Services for October, 1890.*

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Iowa.....	86	88	Nebraska.....	84	84
Illinois.....	75	71	New Jersey.....	83	88
Kansas.....	83	90	North and South Dakota.....	68	84
Michigan.....	82	87	Ohio.....	82	89
Minnesota.....	70	83	Pennsylvania.....	78	87
Missouri.....	79	84	South Carolina.....	80	90

## ○ STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts and summaries are republished from reports for October, 1890, of the directors of the various state weather services:

### ○ ARKANSAS.

*Temperature.*—The mean was 1.7 below the normal; maximum, 91, at Lead Hill, 12th; minimum, 26, at Devall's Bluff and Stuttgart, 31st; greatest monthly range, 61, at Lead Hill; least monthly range, 32, at Malvern.

*Precipitation.*—The average was 1.00 above the normal of the last 8 years;

greatest monthly, 4.46, at Camden; least monthly, 1.46, at Pine Bluff.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Sergeant, Signal Corps, assistant.*

### ○ ALABAMA.

*Temperature.*—The mean was 2.5 below the normal; maximum, 93, at